

sub
EU
B1

(d) repeating steps a through c to attach a same or different nucleic acid at a same or different localized area until an array of at least 1000 different reagents at different localized areas is formed.

In the drawings:

Applicants respectfully request approval of the proposed drawing change to Fig. 13a which is shown in red ink. The lead lines for 409 and 501 have been redrawn to conform with the teaching in the specification at pages 23 and 24. Applicants have also provided a formal drawing of Fig. 13a in anticipation of the Draftsperson's approval of the drawing change.

REMARKS

Prior to examination on the merits, applicants respectfully request entry and consideration of the above amendments and newly submitted claims. Applicants' newly submitted claims 48-147 are supported by the specification and accordingly, do not constitute new matter.

The subject matter of claim 48 is supported throughout the specification and specifically at page 13 line 38 to page 14 line 10 which describes methods of forming arrays using a dispenser to move from region to region and depositing only as much monomer as necessary. Further support is found at page 25 line 8 to page 28 line 16 which describes locating a dispenser containing a solution comprising a compound a distance away from a surface of a support; dispensing a droplet of 5 nanoliters or less from the dispenser with the droplet contacting the surface at a localized area smaller than 1 cm² (page 10 line 9); allowing the compound to attach directly or indirectly to the

surface of the support at the localized area; and repeating the steps until an array of at least 10 different reagents at different localized areas is formed (page 24 line 20). Support for the dependent claims is provided at least at the citations to follow:

<u>Claim</u>	<u>Subject Matter</u>	<u>Citation</u>
49.	Compound is dissolved in the solution	p. 14 l. 3
50.	Compound is in the form of a pellet	p. 30 l. 9
51.	Contacting the dispenser to the surface of the support	p. 27 l. 23
52.	Cover plate	P. 34 l. 19
53.	Distance away is between about 5 microns and about 50 microns	p. 27 l. 16
54.	Distance away is about 10 microns	p. 27 l. 18
55.	Droplet fits within a region having a diameter of less than about 300 microns	p. 28 l. 13-14
56.	Compound comprises a monomer or a polymer	p. 4 l. 2-7
57.	Monomer comprises a nucleotide or an amino acid	p. 6 l. 33 to p. 7 l. 31
58.	Polymer comprises a nucleic acid, oligonucleotide, polynucleotide, peptide, polypeptide, presynthesized polymer, polyurethane, polyester, polycarbonate, polyurea, polyamide, polyethyleneimine, polyacetate, receptor, enzyme, antibody, catalytic polypeptide, hormone receptor, or opiate receptor	p. 6 l. 2 to p. 9 l. 16; p. 4 l. 5-7.
59.	Polymer comprises at least 2 monomers	p. 24 l. 23-26
60.	Polymer comprises greater than 100 monomers	p. 24 l. 23-26
61.	Polymer comprises 2, 3, 4, 5, 6, 10, 15, 20, 30, 40, 50, 75, or 100 monomers	p. 24 l. 23-26
62.	Support is selected from the group consisting of substantially flat substrates, substrates having raised or depressed regions, beads, gels, sheets, particles, strands, precipitates, spheres, containers, capillaries, pads, slices, films, plates, and slides	p. 9 l. 18-28; p. 14 l. 15-26.
63.	Support comprises a gel.	p. 9 l. 18-28; p. 14 l. 15-26.
64.	Support comprises biological materials, nonbiological materials, organic materials or inorganic materials	p. 14 l. 15-16
65.	Support is a disc, square, or circle	p. 14 l. 20
66.	Localized area is smaller than 1mm ²	p. 10 l. 1-14
67.	Localized area is smaller than 0.5mm ²	p. 10 l. 1-14

68. Localized area is smaller than 10,000 μm^2 p. 10 l. 1-14
69. Localized area is smaller than 100 μm^2 p. 10 l. 1-14
70. Reagents are at least 5% pure in their respective localized areas p. 10 l. 16-31
71. Reagents are at least between about 10% and about 20% pure in their respective localized areas p. 10 l. 16-31
72. Reagents are at least between about 80% and about 90% pure in their respective localized areas p. 10 l. 16-31
73. Reagents are at least greater than about 95% pure in their respective localized areas p. 10 l. 16-31
74. Array of at least 100 different reagents at different localized areas is formed p. 24 l. 19-26
75. Array of at least 1000 different reagents at different localized areas is formed p. 24 l. 19-26
76. Array of at least 10,000 different reagents at different localized areas is formed p. 24 l. 19-26
77. Array of at least 100,000 different reagents at different localized areas is formed p. 24 l. 19-26
78. Array of at least 1,000,000 different reagents at different localized areas is formed p. 24 l. 19-26
79. Step (d) further comprises forming an array of at least 1000 different compounds occupying localized areas within 1 cm^2 of the surface of the support. p. 25 l. 33-35
80. Support comprises glass, derivatized glass, pyrex, quartz, a polymeric material, polystyrene, polycarbonate, silicon or a gel. p. 20 l. 16-20
p. 38 l. 40-42
p. 9 l. 18-28;
p. 14 l. 15-26.
81. Solution of the compound comprises an aqueous solution p. 4 l. 17-18
82. Dispenser comprises a plurality of dispensing units, wherein the plurality of dispensing units is in fluid communication with a solution comprising a compound and wherein step(b) comprises dispensing a droplet of 5 nl or less from one or more of the plurality of dispensing units. p. 14 l. 7-10
Figure 12
83. Support bears at least two reference points for positioning the dispenser over at least one of said localized areas for release of said droplet. p. 25 l. 36-42


84. Reference points comprise global reference points for positioning the dispenser over a local region of the surface of the support, and local reference points within the local region for positioning the dispenser over a localized area within the local region. p. 26 l. 9-27
85. Dispenser further comprises a camera for identifying the reference points p. 26 l. 28-34
86. Step of sensing changes in capacitance to identify the reference points p. 26 l. 34-41
87. Step of sensing changes in light intensity to identify the reference points p. 26 l. 34-41
88. Step of sensing changes in resistivity to identify the reference points p. 26 l. 34-41
89. Step of sensing changes in optical properties to identify the reference points p. 26 l. 34-41
90. Step of sensing changes in magnetic properties to identify the reference points p. 26 l. 34-41
91. Plurality of dispensing units comprises a manifold of delivery lines p. 14 l. 8-10
Figure 12
92. Plurality of dispensing units comprises an array of pipettes p. 14 l. 8-10
Figure 12
93. Plurality of dispensing units comprises a series of tubes p. 14 l. 8-10
Figure 12
94. Plurality of dispensing units includes control valves p. 23 l. 14-15
95. Compound is bound indirectly to the surface of the support via a linker molecule p. 14 l. 34-39
96. Dispenser is moved relative to the support p. 14 l. 3-5
97. Support is moved relative to the dispenser p. 24 l. 9-11
98. One or more localized areas are spaced less than about 3 mm apart p. 25 l. 24-26
99. One or more localized areas are spaced less than between about 5 microns and 100 microns apart p. 25 l. 24-26
100. One or more localized areas has an angular relation between each localized area of about 1 degree p. 25 l. 27-29
101. One or more localized areas has an angular relation between each localized area of about 0.1 degree p. 25 l. 27-29
102. Support comprises at least about 100 localized areas p. 25 l. 29-31
103. Support comprises at least about 1000 localized areas p. 25 l. 29-31
104. Support comprises at least about 10,000 localized areas p. 25 l. 29-31
105. Support comprises at least about 1000 localized areas per cm² of surface of substrate p. 25 l. 33-35

106. Support comprises at least about 10,000 localized areas per cm² of surface of substrate p. 25 l. 33-35
107. Support comprises a strand including one or more of glass, derivatized glass, quartz or a polymeric material p. 20 l. 16-20
p. 38 l. 40-42
p. 9 l. 18-28
p. 14 l. 15-26
108. Dispenser comprises a dispenser tip and a sheath encircling the dispenser tip and rigidly extending a fixed distance beyond the dispenser tip p. 27 l. 29-36
109. Surface of the support comprises a hydrophilic or hydrophobic substance p. 13 l. 30-32
p. 19 l. 32-35
110. Surface of the support comprises a photoresist p. 19 l. 32-35
111. Surface of the support is cleaned prior to the step of dispensing a droplet p. 20 l. 44-45
112. Dispenser comprises a pipette p. 14 l. 5-10
113. Dispenser comprises a capillary tube p. 28 l. 14
114. Dispenser comprises an electrophoretic pump p. 29 l. 1-16
115. Dispenser comprises an osmotic pump p. 29 l. 41 to p. 30 l. 6
116. Dispenser comprises a cell sorter p. 29 l. 41 to p. 30 l. 6

Claims 117 through 147 include subject matter the support for which is already provided above. Applicants respectfully request entry and consideration of the amendments and newly submitted claims.

Respectfully submitted,

Dated: May 16, 2000


John P. Iwanicki, Reg. No. 34,628
BANNER & WITCOFF, LTD.
28 State Street, 28th Floor
Boston, MA 02109
(617) 227-7111